

Date: Thursday, 17/01/2008 9:12:29 AM  
 User: Linda Lacelle

## Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : MID TUBE ASSEMBLY  
 Job Number : 36807  
 Estimate Number : 11446  
 P.O. Number :  
 This Issue : 17/01/2008 S.O. No. :  
 Prsht Rev. : NC Part Number : D3391013  
 First Issue : / / Type : LANDING GEAR Drawing Number : D3391 REV G  
 Previous Run : 36806 Project Number : N/A  
 Drawing Revision : G  
 Material :  
 Due Date : 31/01/2008 Qty: 1 Um: Each  
 Written By :  
 Checked & Approved By :  
 Comment : Est. A 05.12.18 New Issue EC  
 Est. B 06.02.09 Dwg rev.D EC  
 Est Rev:06-03-28 Update Manufacturing Instructions JLM  
 est rev D 07.03.14 dwg Rev F EC  
 Est Rev:E ECN 1056 07-11-13 DD verified by: EC

## Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 D25001100 Skidtube Extrusion



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

SKIDTUBE EXTRUSION

Pick:

Qty Part Number Description Batch

1 D2500-1-100 Extrusion

B24593

DP 8-1-17

2.0 D3391011 Fwd Tube Assembly



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Fwd Tube Assembly

Batch:

B35834

DP 8-1-17

3.0 LANDING GEAR 1 LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Cut tube to finish length as per Dwg D3391

2-Drill pilot holes including "B" holes using DT8796 as per Dwg D3391

3-Open float bag holes as per Dwg D3391

4-C'sink float bag holes as per Dwg D3391

5-Open remaining holes as per dwg D3391

6- Locate electric step holes 41.5000" from fwd end and drill using DT 8393

DP 8-1-17

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

Date: Thursday, 17/01/2008 9:12:29 AM  
User: Linda Lacelle

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: MID TUBE ASSEMBLY

Job Number: 36807

Part Number: D3391013

Job Number:



Seq. #:

Machine Or Operation:

Description :

- 7- Open electric step holes 0.332" per dwg D3391 (section L-L)
- 8- Open electric step holes 0.250" per dwg D3391 (section M-M)
- 9- Open electric step holes 0.250" per dwg D3391 (section LL-LL)
- 10- Remove .030" from Fwd indexing Ridge as per Dwg D3391
- 11- Remove indexing ridge on Fwd & Aft end of skid tube as per Dwg D3391
- 12- Deburr
- 13- Drill #30 pilot holes using wearplate Jig DT8217 Identify Ø0.208" holes with paint marker
- 14- Open wearplate holes of D3391-013 assembly detail section G-G to Ø0.250" (14 holes) as per Dwg D3391
- 15- Open wearplate holes of D3391-013 assembly detail section H-H to Ø0.257" and c'sink (20 holes) as per Dwg D3391
- 16- Open .375" holes to .438"
- 17- Insert D3391-011 and clip in place with wearplate holes, transfer drill saddle holes as per dwg D3391.
- 18- C'sink holes for crossbolt spacers. *MA As per Rev G.*
- 19- Deburr and blow out all chips from inside tube

4.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

5.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1  
Touch-up alodine in D3391-011

6.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

# Dart Aerospace Ltd

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: D3391-013 PAR #: N/A Fault Category: Roll Landing Gear NCR: Yes No DQA: D Date: 08/01/22  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: <u>36807</u> |      | WORK ORDER NON-CONFORMANCE (NCR)  |                             |   |                |                           |                       |                          |
|-------------------|------|---|-----------------------------|---|----------------|---------------------------|-----------------------|--------------------------|
| DATE              | STEP | Description of NC<br>Section A  | Corrective Action Section B |   |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|                   |      |   | Initial<br>Chief Eng        | Action Description<br>Chief Eng   | Sign &<br>Date |                           |                       |                          |
| 08/01/22          | #30  | The 6th hole from RAD<br>END of the D3391-013 (mid tube)<br>is off by 0.500".<br>R.C the Drill Sg DT8796<br>was machines wrong. |                             | Fill in incorrect hole with<br>weld as per ASE 004.<br>APB/AE 106390                              | BE<br>08/01/22 |                           |                       |                          |
|                   |      |   |                             | grind weld flush  | DPB-1-22       | 08/01/24                  | ASIM2                 | 08/01/22                 |
|                   |      |   |                             | Drill hole in correct<br>location as per <del>ASE 004</del><br>Dwg 3391 Rev G.<br>See NCR 08-0134 | DP<br>8-1-22   | 08/01/24                  | ASIM2                 | 08/01/22                 |
|                   |      |   |                             |   |                |                           |                       |                          |

NOTE: Date & initial all entries

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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: MID TUBE ASSEMBLY

Job Number: 36807

Part Number: D3391013

Job Number:



Seq. #:

Machine Or Operation:

Description :

7.0

D33891

Web



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

WEB

Pick:

Qty Part Number Description Batch

1 D3389-1 Web

A/R Sikaflex-241/-291

Sikaflex expire date:

Start: ~~8-1-22~~ Time: 12:40 PM

Finish: 8-1-23 Time: 1:00

B35807  
M105469  
8-1-30

PD 8-1-22

8.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

Bond web in place as per Dwg D3391 & QSI 015.

\*\*\*\*\*Ensure Web Alignment \*\*\*\*\*

PD 8-1-22

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

Inspect each insert using DT8821

BE 08/01/23

10.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

Weld crossbolt spacer as per dwg D3391 & QSI 004

CROSS BOLT SPACER D3681-1 B35814 (42) B35738 (82)  
ALUMINUM 100 M106390 BE 08/01/23

11.0

QC9

VISUAL WELDING INSPECTION



Comment: VISUAL WELDING INSPECTION

PD 08.01.25 (1)

12.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

BE 08/01/25 (4)

13.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

Use paint screws to mask inserts.

M 106379

(IX)  
M-1 08/01/25

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| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

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## Process Sheet

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Drawing Name: MID TUBE ASSEMBLY

Job Number: 36807

Part Number: D3391013

Job Number:



Seq. #:

Machine Or Operation:

Description :

14.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

FL 08/01/25 ①

15.0

ALS41032130

Insert



Comment: Qty.: 24.0000 Each(s)/Unit Total : 24.0000 Each(s)

INSERT

batch:

M105729

or equivalent

per QSI 017

m-h

16.0

ALS4428165

Inserts



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Inserts

batch:

M6988A

m-h

17.0

D36721

PHENOLIC WASHER



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

PHENOLIC WASHER

batch:

B34470

m-h

18.0

D36723

PHENOLIC WASHER



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

PHENOLIC WASHER

batch:

B34471

m-h

19.0

AN960C10L

washer



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

WASHER

batch:

M106552

m-h

20.0

AN960C416L

WASHER



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

WASHER

batch:

M100993

\* ①X  
m-h 08/01/25

# Dart Aerospace Ltd

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: PD Date: 08/01/09  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries



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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: MID TUBE ASSEMBLY

Job Number: 36807

Part Number: D3391013

Job Number:



| Seq. #: | Machine Or Operation: | Description : |
|---------|-----------------------|---------------|
|---------|-----------------------|---------------|

|      |             |       |
|------|-------------|-------|
| 21.0 | MS27039C109 | SCREW |
|------|-------------|-------|



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

SCREW

batch: M17831

M. J.

|      |             |       |
|------|-------------|-------|
| 22.0 | MS27039C408 | SCREW |
|------|-------------|-------|



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

SCREW

batch: M17831

M. J.

|      |                 |                            |
|------|-----------------|----------------------------|
| 23.0 | HAND FINISHING1 | HAND FINISHING RESOURCE #1 |
|------|-----------------|----------------------------|



(1X)

Comment: HAND FINISHING RESOURCE #1

Assemble as per dwg D3391

M. J.

08/01/25

|      |     |                              |
|------|-----|------------------------------|
| 24.0 | QC5 | INSPECT WORK TO CURRENT STEP |
|------|-----|------------------------------|



Comment: INSPECT WORK TO CURRENT STEP

08/01/28 (1)

|      |             |                       |
|------|-------------|-----------------------|
| 25.0 | PACKAGING 1 | PACKAGING RESOURCE #1 |
|------|-------------|-----------------------|



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: \_\_\_\_\_

PPA 35922

08/01/29 (1)

|      |      |                              |
|------|------|------------------------------|
| 26.0 | QC21 | FINAL INSPECTION/W/O RELEASE |
|------|------|------------------------------|



(1)

Comment: FINAL INSPECTION/W/O RELEASE

08/01/29

Job Completion



08-01-29

**Dart Aerospace Ltd**

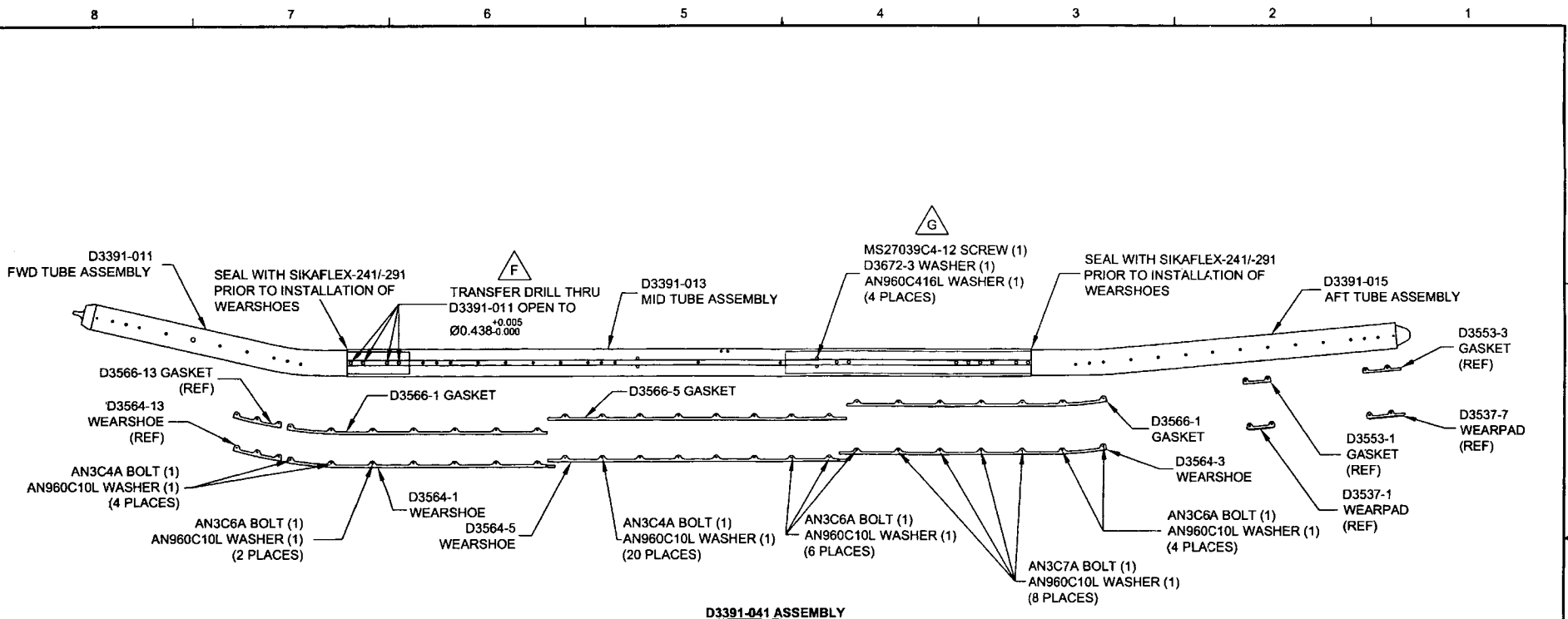
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



RELEASED  
27-11-06

#### D3391-041 FLOAT SKIDTUBE ASSEMBLY PARTS LIST

| QTY | PART NUMBER  | DESCRIPTION             |
|-----|--------------|-------------------------|
| X   | D3391-041    | FLOAT SKIDTUBE ASSEMBLY |
| 1   | D3391-011    | FWD TUBE ASSEMBLY       |
| 1   | D3391-013    | MID TUBE ASSEMBLY       |
| 1   | D3391-015    | AFT TUBE ASSEMBLY       |
| 1   | D3564-1      | WEARSHOE                |
| 1   | D3564-3      | WEARSHOE                |
| 2   | D3566-1      | GASKET                  |
| 1   | D3566-5      | GASKET                  |
| 4   | D3672-3      | WASHER                  |
| 24  | AN3C4A       | BOLT                    |
| 12  | AN3C6A       | BOLT                    |
| 8   | AN3C7A       | BOLT                    |
| 44  | AN960C10L    | WASHER                  |
| 4   | MS27039C4-12 | SCREW                   |
| 4   | AN960C416L   | WASHER                  |

#### GENERAL NOTES

- 1) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
- 2) SPRAY INSIDE OF TUBE WITH A COAT OF LPS LABORATORIES "LPS-3" AFTER FINISH  
AND AFTER INSTALLATION OF INSERTS. COAT ALL EXPOSED FASTENERS WITH  
LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS  
OFF POWDER COATING WITH MEK DEGREASER.
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) USE DART DRILL TEMPLATE DT8217 TO LOCATE AND DRILL Ø0.297 SIZE HOLES  
FOR WEARSHOE INSERTS. C'BORE AS NOTED AND INSTALL INSERTS EXCEPT  
WHERE INDICATED.

|   |   |    |          |
|---|---|----|----------|
| G   | REPLACE NAS INSERTS W/ AELS INSERTS<br>SWITCH TO D3670-XXXX SPACERS FOR INSTALLING<br>FLOAT BAGS, DWG REORGANIZED FOR CLARITY | DC | 07.07.31 |
| F   | ADD SS WEARSHOE, GASKET<br>REMOVE FWD SADDLE HOLE -011/-021   | PH | 07.01.18 |
| E   | CHANGE TOLERANCE, EASE MANUFACTURE  | PH | 06.04.25 |
| D   | UPDATE TOLERANCE, CHANGE HOLE SIZE  | PH | 06.01.23 |
| C   | LENGTHEN AFT EXTENSION  | PH | 05.09.27 |
| B   | DRAWING UPDATES   | PH | 05.06.10 |
| A   | NEW ISSUE   | PH | 05.02.07 |
| REV.  | DESCRIPTION   | BY | DATE     |
| DESIGN  |   |    |          |
| DRAWN   |   |    |          |
| CHECKED   |   |    |          |
| MFG. APPR.  |   |    |          |
| APPROVED  |   |    |          |
| DE APPR.  |   |    |          |
| DATE  | 07.07.31  |    |          |
| <b>DART AEROSPACE USA, INC</b><br>PORT HADLOCK, WA<br>DRAWING NO. D3391<br>SHEET 1 OF 8<br>TITLE 412 FLOAT SKIDTUBE<br>SCALE NTS<br>COPYRIGHT © 2005 BY DART AEROSPACE USA, INC.<br>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS<br>NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT<br>WRITTEN PERMISSION FROM DART AEROSPACE USA, INC. |   |    |          |

**Dart Aerospace Ltd**

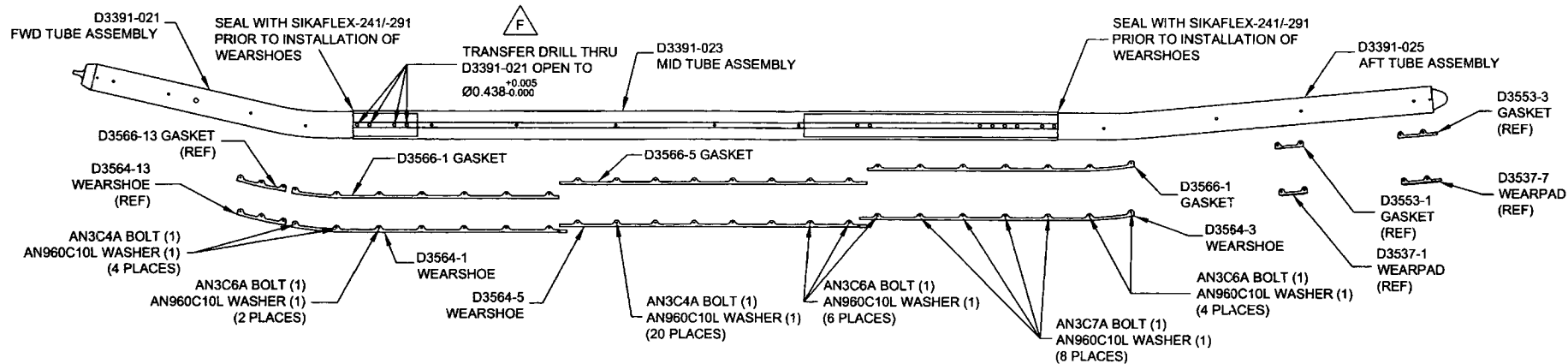
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



**D3391-043 ASSEMBLY**

**RELEASED**  
07.11.21

**D3391-043 FLOAT SKIDTUBE ASSEMBLY PARTS LIST**

| QTY | PART NUMBER | DESCRIPTION             |
|-----|-------------|-------------------------|
| X   | D3391-043   | FLOAT SKIDTUBE ASSEMBLY |
| 1   | D3391-021   | FWD TUBE ASSEMBLY       |
| 1   | D3391-023   | MID TUBE ASSEMBLY       |
| 1   | D3391-025   | AFT TUBE ASSEMBLY       |
| 1   | D3564-1     | WEARSHOE                |
| 1   | D3564-3     | WEARSHOE                |
| 1   | D3564-5     | WEARSHOE                |
| 2   | D3566-1     | GASKET                  |
| 1   | D3566-5     | GASKET                  |
| 24  | AN3C4A      | BOLT                    |
| 12  | AN3C6A      | BOLT                    |
| 8   | AN3C7A      | BOLT                    |
| 44  | AN960C10L   | WASHER                  |

**GENERAL NOTES**

- 1) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
- 2) SPRAY INSIDE OF TUBE WITH A COAT OF LPS LABORATORIES "LPS-3" AFTER FINISH AND AFTER INSTALLATION OF INSERTS. COAT ALL EXPOSED FASTENERS WITH LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS OFF POWDER COATING WITH MEK DEGREASER.
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) USE DART DRILL TEMPLATE DT8217 TO LOCATE AND DRILL Ø0.297 SIZE HOLES FOR WEARSHOE INSERTS. C'BORE AS NOTED AND INSTALL INSERTS EXCEPT WHERE INDICATED.

|  |          |                                |
|--|----------|--------------------------------|
| DESIGN   | PH       | <b>DART AEROSPACE USA, INC</b> |
| DRAWN  | JC       | PORT HADLOCK, WA               |
| CHECKED  | JP       | DRAWING NO. D3391              |
| MFG. APPR.   | JP       | REV. G                         |
| APPROVED   | JP       | SHEET 2 OF 8                   |
| DE APPR.   | JP       | TITLE 412 FLOAT SKIDTUBE       |
| DATE   | 07.07.31 | SCALE NTS                      |
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**Dart Aerospace Ltd**

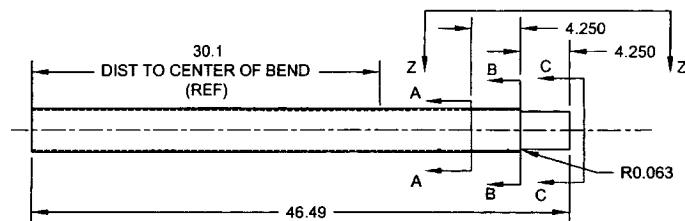
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

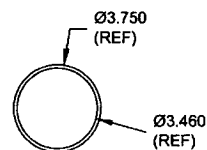
QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

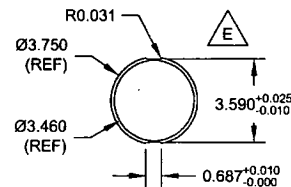
**NOTE:** Date & initial all entries



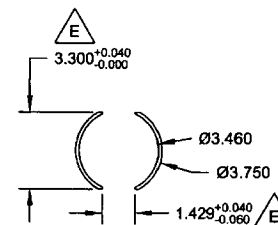
**D3391-1 CUTTING DETAIL**  
(MAKE FROM D6013-047 SKIDTUBE MATERIAL)



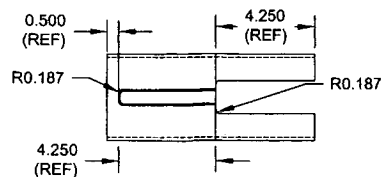
**SECTION A-A**  
(SCALE 1:5)



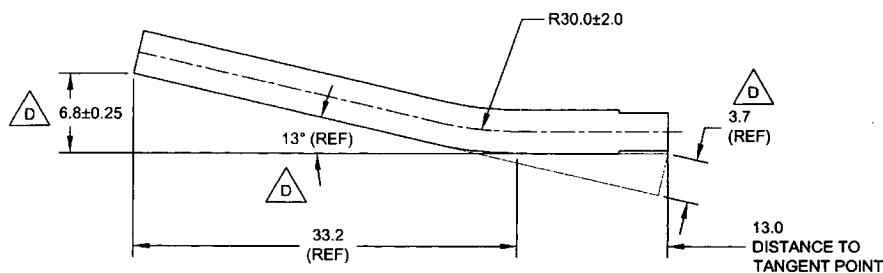
**SECTION B-B**  
(SCALE 1:5)



**SECTION C-C**  
(SCALE 1:5)



**VIEW Z-Z**  
(SCALE 1:5)



**D3391-011/-021 BENDING DETAIL**  
(MAKE FROM D3391-1)

RELEASED  
07-11-06 MP

|            |          |   |
|------------|----------|---|
| DESIGN     |          | <b>DART AEROSPACE USA, INC</b>              |
| DRAWN      | JLC      | PORT HADLOCK, WA                            |
| CHECKED    |          | DRAWING NO. REV. G                          |
| MFG. APPR. |          | D3391 SHEET 3 OF 8                          |
| APPROVED   |          | TITLE SCALE                                 |
| DE APPR.   |          | 412 FLOAT SKIDTUBE 1:10                     |
| DATE       | 07.07.31 | COPYRIGHT © 2005 BY DART AEROSPACE USA, INC |

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**Dart Aerospace Ltd**

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

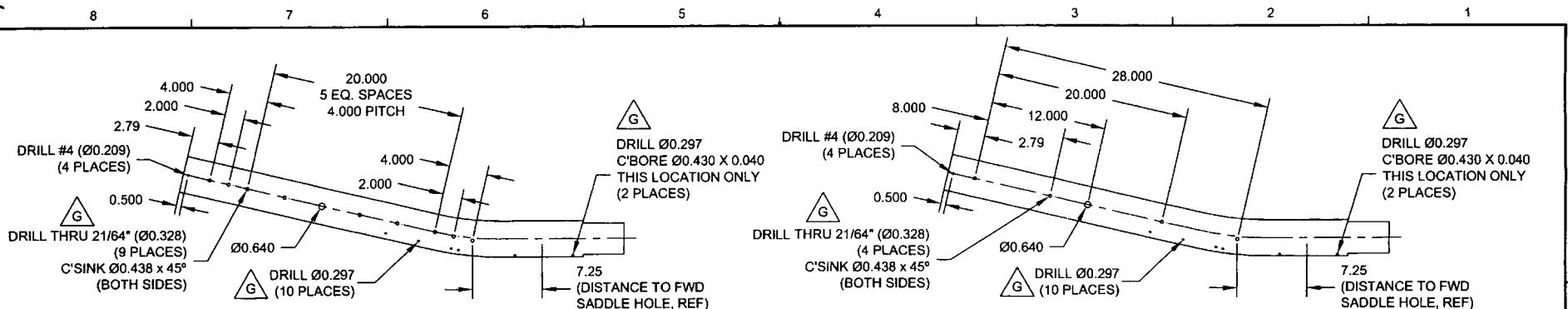
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

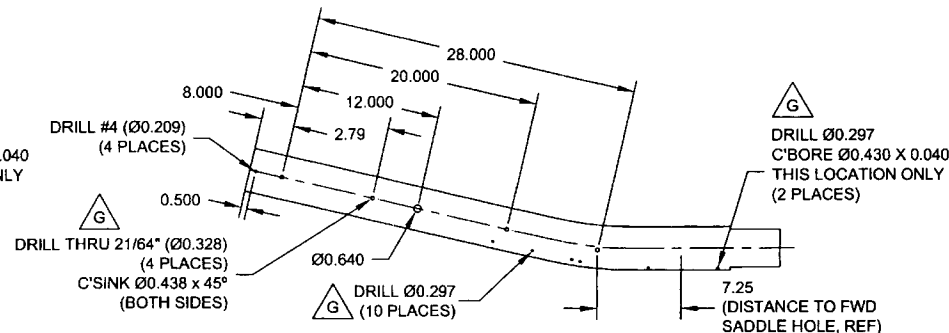
| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

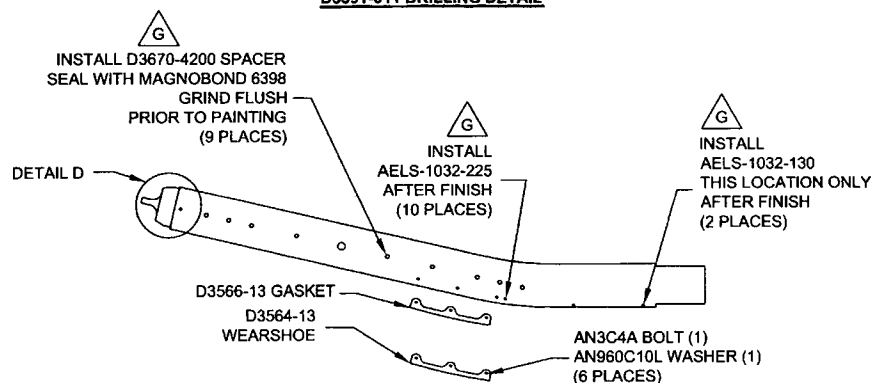




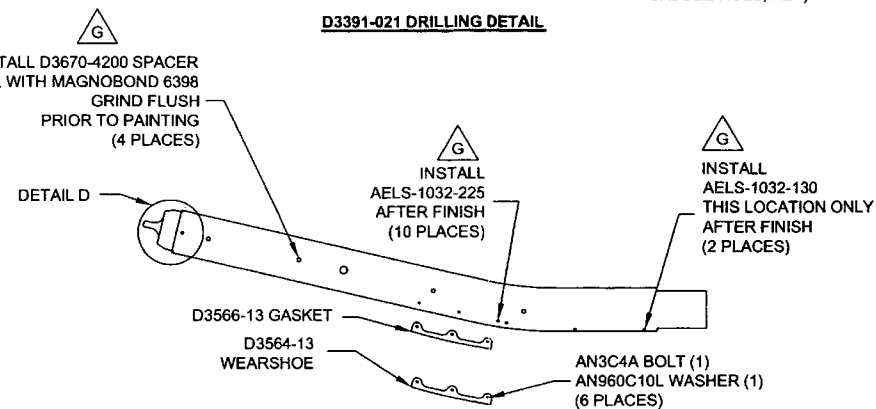
**D3391-011 DRILLING DETAIL**



**D3391-021 DRILLING DETAIL**



**D3391-011 ASSEMBLY DETAIL**

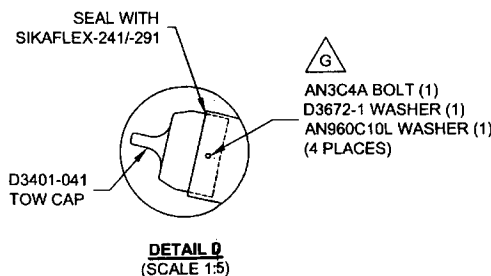


**D3391-021 ASSEMBLY DETAIL**

**RELEASED**  
07-11-06

**D3391-011/-021 FWD TUBE ASSEMBLY PARTS LIST**

| QTY - 011 | QTY - 021 | PART NUMBER   | DESCRIPTION       |
|-----------|-----------|---------------|-------------------|
| X         |           | D3391-011     | FWD TUBE ASSEMBLY |
|           | X         | D3391-021     | FWD TUBE ASSEMBLY |
| 1         | 1         | D6013-047     | FWD TUBE          |
| 1         | 1         | D3401-041     | TOW CAP           |
| 1         | 1         | D3564-13      | WEARSHOE          |
| 1         | 1         | D3566-13      | GASKET            |
| 9         | 4         | D3670-4200    | SPACER            |
| 4         | 4         | D3672-1       | WASHER            |
| 10        | 10        | AN3C4A        | BOLT              |
| 10        | 10        | AN960C10L     | WASHER            |
| 2         | 2         | AELS-1032-130 | INSERT            |
| 10        | 10        | AELS-1032-225 | INSERT            |



|            |          |                                |
|------------|----------|--------------------------------|
| DESIGN     |          | <b>DART AEROSPACE USA, INC</b> |
| DRAWN      |          | PORT HADLOCK, WA               |
| CHECKED    |          | DRAWING NO. D3391              |
| MFG. APPR. |          | REV. G                         |
| APPROVED   |          | SHEET 4 OF 8                   |
| DE APPR.   |          | TITLE 412 FLOAT SKIDTUBE       |
| DATE       | 07.07.31 | SCALE 1:10                     |

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**Dart Aerospace Ltd**

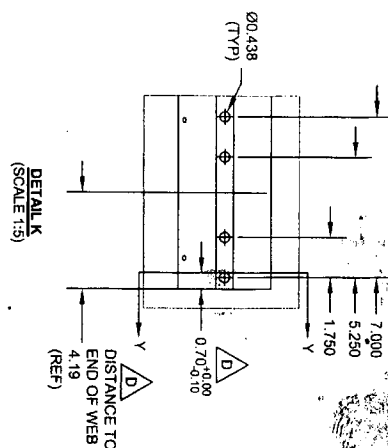
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

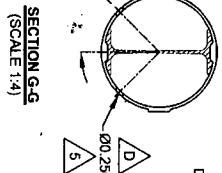
QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

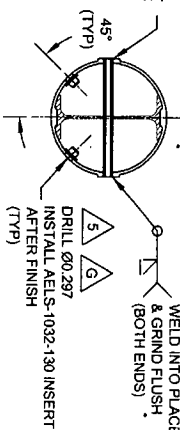
**NOTE:** Date & initial all entries



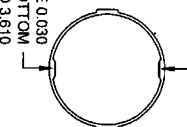
**SECTION G-G**  
**(SCALE 1:4)**



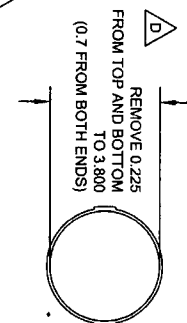
**SECTION H-H** (12 PLACES)  
(SCALE 1:4)



**SECTION X-X**  
**(SCALE 1:4)**



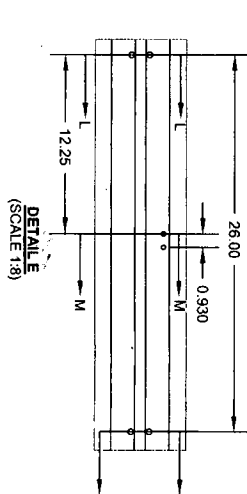
**SECTION Y-Y**  
**(SCALE 1:4)**



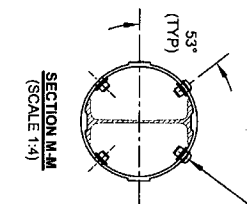
| QTY | PART NUMBER   | DESCRIPTION       |
|-----|---------------|-------------------|
| 013 |               | MID TUBE ASSEMBLY |
| X   | D3891-013     |                   |
| 1   | D2500-1-100   | EXTRUSION         |
| 1   | D3389-1       | WEB               |
| 12  | D3681-1       | SPACER            |
| 4   | D3672-1       | WASHER            |
| 4   | D3672-3       | WASHER            |
| 224 | AEL5-1032-130 | INSERT            |
| 4   | AL54-428-165  | INSERT            |
| 4   | AN960C10L     | WASHER            |
| 4   | AN960C416L    | WASHER            |
| 4   | MSZ7039C1-09  | SCREW             |
| 4   | MSZ7039C4-08  | SCREW             |

## ABLY

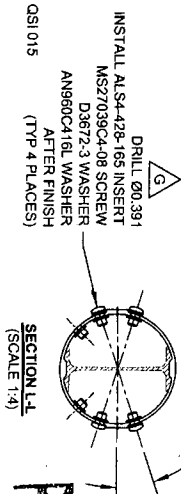
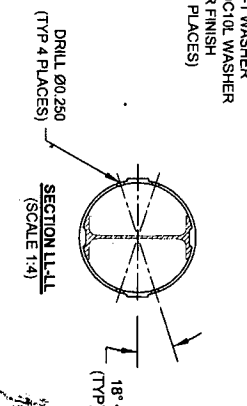
- 1) MATERIAL: MAKE FROM D2500-1-100 EXTRUSION
- 2) INSTALL D3389-1 WEB TO OUTER TUBE USING SIKAFLEX-241/291 PER QSI 015
- 3) WELDING: PER DART QSI 004



**SECTION M-4**  
**(SCALE 1:4)**



## (TYP 4 PLACES)



**SECTION L-1**  
**(SCALE 1:4)**

RELEASED  
2011-06-14

|                         |          |                    |              |
|-------------------------|----------|--------------------|--------------|
| DART AEROSPACE USA, INC |          | DRAWING NO.        | REV. G       |
| PORT HADLOCK, MA        |          | D3391              | SHEET 5 OF 8 |
| DESIGN                  | HY       | TITLE              | SCALE        |
| CHECKED                 | JK       | 412 FLOAT SKIDTUBE | 1/200        |
| MFG. APPR.              | 1/0      |                    |              |
| APPROVED                | JK       |                    |              |
| DE APPR.                |          |                    |              |
| DATE                    | 07.07.31 |                    |              |

**Dart Aerospace Ltd**

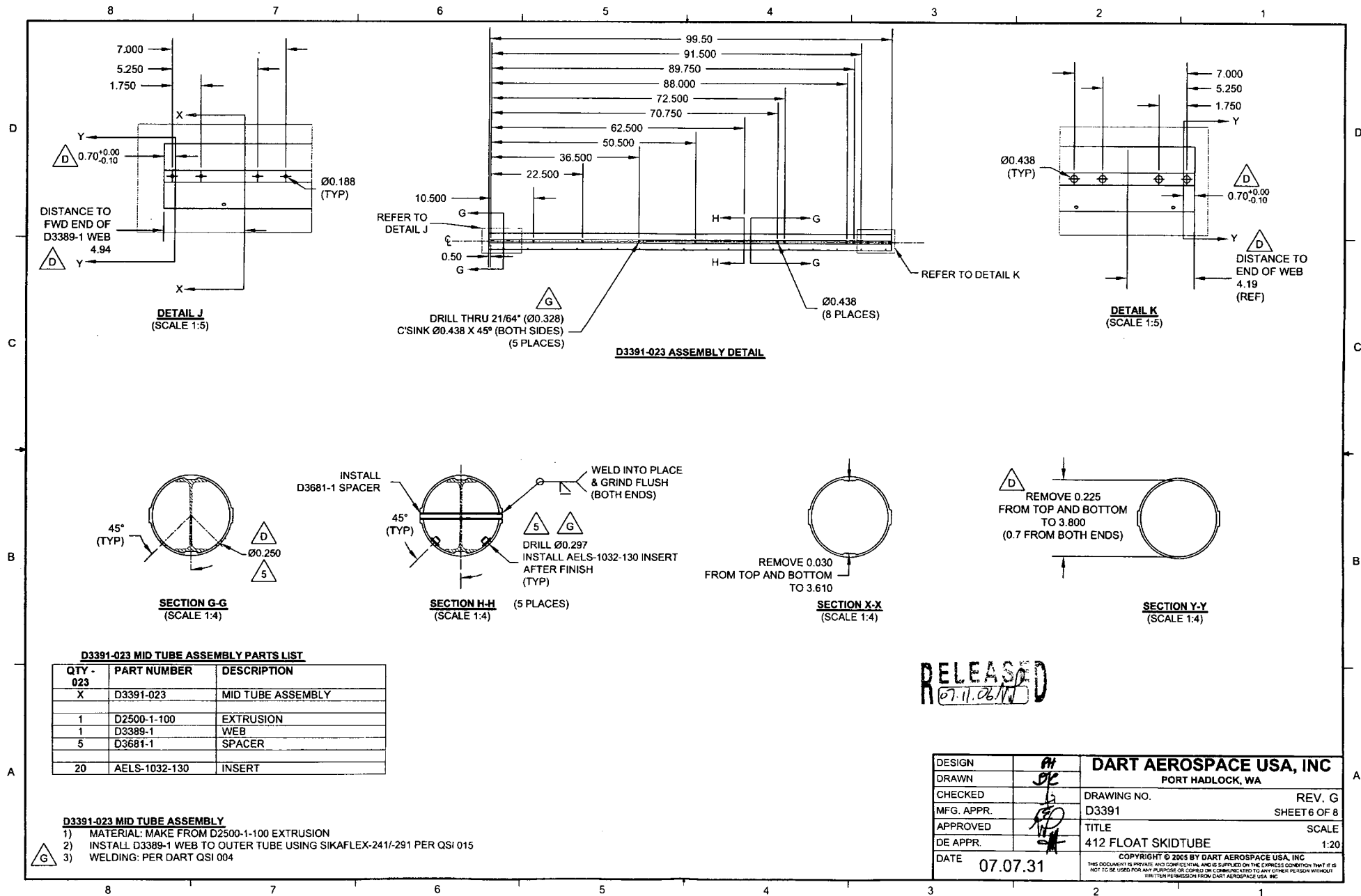
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



**Dart Aerospace Ltd**

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



**Dart Aerospace Ltd**

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

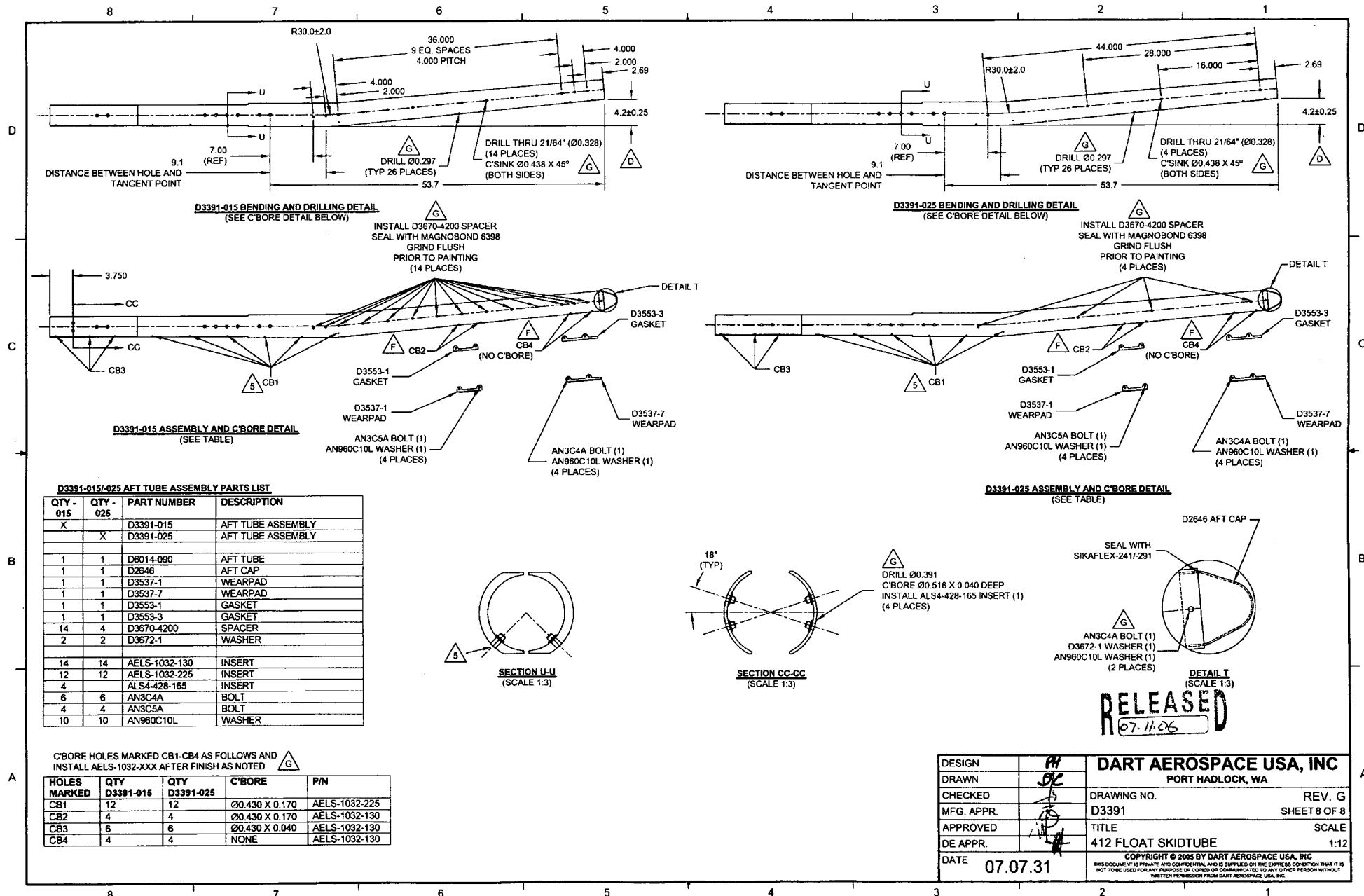
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries





| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

NO. 145

AWS D17 1.2001  
QUALIFICATION TEST RECORD

Name Barclay E.  
Joint Welding Procedure GTAU  
Part number and Job number D339 102 / B 35162

TEST WELDS REQUIRED

BASE METAL Aluminium  
Penetration Complete ☐ Partial ☒  
Current AC ☒ DC ☐  
WELDING PROCESS TIG  
Single Weld ☒ Double Weld ☐  
Backing YES ☐ NO ☒

|              | Position                    | Vertical                    | Down                        | Up                          |
|--------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Sheet Groove | 1G <input type="checkbox"/> | 2G <input type="checkbox"/> | 3G <input type="checkbox"/> | 4G <input type="checkbox"/> |
| Tube Groove  | 1G <input type="checkbox"/> | 2G <input type="checkbox"/> | 5G <input type="checkbox"/> | 6G <input type="checkbox"/> |
| Sheet Fillet | 1F <input type="checkbox"/> | 2F <input type="checkbox"/> | 3F <input type="checkbox"/> | 4F <input type="checkbox"/> |
| Tube Fillet  | 1F <input type="checkbox"/> | 2F <input type="checkbox"/> | 4F <input type="checkbox"/> | 5F <input type="checkbox"/> |

Crossbolt Spacer Welded into Skid tube

TEST RESULTS

Visual Pass ☒ Fail ☐  
Penetration Pass ☒ Fail ☐  
Crossbolt Spacer Pass ☒ Fail ☐

The above named individual is qualified in accordance with AWS D17.1.2001 to weld

Date of Test Coupon 08-01-13 Qualifier Pat. Duval